

DETAILED ACTION

Election/Restrictions

1. Claims 10-12 and 14-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/29/2009.

Applicant's election with traverse of Group I invention in the above reply is acknowledged. The traversal is on the ground(s) that search and examination of all claims would place no undue burden on the examiner. This is not found persuasive because applicant's arguments fails to provide any adequate or meaningful evidence/support to show why and/or how the two groups of invention do not lack the same or corresponding special technical features identified in the previous office action. And, as explained in the previous office action, the inventions of Group I and Group II are distinct; they have acquired a separate status in the art as shown by their different classification. The search required for Group I is not required for Group II.

Although only a few of classes/subclasses were given in the previous office action, they are only the exemplary ones. Along with required key word search, a thorough search is required in each of the classes/subclasses: 257/40, 295, 310, e27.104, e51.007 for the Group-I invention; and 438/3, 83, 100, 240, e21.008, e21.663, e21.664 for the Group-II invention. Thus, search and examination of all of the claims with all the species would impose a substantially undue burden upon the examiner.

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The requirement is still deemed proper and is therefore made FINAL.

Nevertheless, applicant is reassured that, upon the allowance of any of the elected claim(s) readable on the Group-1 of invention, applicant will be entitled to consideration of claims of the Group-2 invention which are written in dependent form or otherwise include all the limitations of the allowed claim(s).

Duty to Disclose Information Material to Patentability

According to 37 CFR 1.56:

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

There are some references found to be material to the patentability of the instant invention, including but not limited to the references listed in the search report of WO

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2005/0644682, with which the instant application claims priority. All of these references are believed to be material to the instant invention as they are materially related to a same invention. These references are apparently known to the applicant; yet, they have not been fully disclosed by the applicant. Applicant is reminded of the duty, and is required to take action to fulfill the duty, to disclose to the Office all information known to that applicant to be material to patentability to the instant invention.

Specification

2. The disclosure is objected to because of the following informalities: The specification fails to follow the standard format shown below. Appropriate correction is required.

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent

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application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they

should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing: See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-9 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the term of “the same ferroelectric layer” lacks a sufficient antecedent basis in the claim.

Claim 13 recites the terms of "a selection device" and "a storage device", but fails to clarify: what are their relationships with the same terms already defined in claim 10.

Claims 1 and 13 each recite the subject matters of: a first dielectric layer insulating the control electrode from the rest of the selection device; but they each fail to clarify: what are definitely included in the recited “rest of the selection device” and/or where the recited “rest of the selection device” is definitely located. (such as: whether it is definitely located above, or below, or on the side of the control electrode?)

Claim 2 recites the terms of “a gate electrode”, “a gate dielectric” and “a dielectric”, but fails to clarify their respective relationships with the control electrode, the first and second dielectric layers already defined in claim 1.

In claims 3-6, one or more of the following terms lack sufficient antecedent basis in the claims: the gate electrode, the gate, the transistor, the first electrode, the capacitor, the drain, the source, the second electrode

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-9 and 13, insofar as being in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama (US 2004/0119399 A1) in view of Dimitrakopoulos (US 5,981,970); or, in the alternative, over Dimitrakopoulos in view of Nagayama .

First, it is noted that: the limitations of “applicable for non-volatile memory purposes or latch-up circuits” have not necessarily been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Furthermore, it is noted that any limitations recited and/or implicated in the claims about how the claimed device is made are process limitations, these would not carry patentable weight in this claim drawing to a structure, because distinct structure is not necessarily produced. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985).

Nagayama discloses a device (Fig. 4), comprising: a selection device/transistor (11) having a control/gate electrode (G), a first dielectric layer (GIF) insulating the control electrode from the rest of the selection device; a source; a drain (D); an organic semiconductor film/layer (OSF); and a storage device/capacitor (13) comprising a second dielectric layer (13b) between a first and second electrodes (13a, 13c), wherein

the first dielectric layer of the selection device and the second dielectric layer of the storage device are individual parts of a same dielectric layer (GIF).

Although Nagayama does not expressly disclose that the dielectric layer can be formed of a ferroelectric material, one of the ordinary skill in the art would readily recognize that ferroelectric material is commonly and desirably used to form a capacitor dielectric layer for increasing its capacitance due to its high dielectric constant, and/or to form a high-dielectric-constant gate dielectric layer for improving the performance of the transistor, as evidenced in Dimitrakopoulos (see the ferroelectric gate insulating layer in the cover page figure; also see col. 3, lines 26-47).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the art-known ferroelectric dielectric material, such as the one of Dimitrakopoulos, into the device of Nagayama, so that a device with improved performance for the transistor and/or capacitor therein would be obtained, as it has been held that:

The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Or, in the alternative, it would also have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the integrated capacitor/transistor structure of Nagayama into the device of Dimitrakopoulos, so that an integrated device with desired device functionality would be obtained.

Regarding claim 6, it is further noted that it is well-known in the art that PEDOT/PSS is commonly used in the art to form the electrodes in organic electronic devices for achieving simplified process and/or reduced cost.

Regarding claim 9, it is further noted that, at least in the device of Nagayama, the dielectric layer (GIF) comprises a hole (TH).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-E are cited as being related to a thin film device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shouxiang Hu/
Primary Examiner, Art Unit 2811